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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 24

Application Number: 09/424,210
Filing Date: November 22, 1999
Appellant(s): TSCHUDI, JON

Richard Wydeven
For Appellant

SUPPLEMENTAL EXAMINER'S ANSWER

MAILED

MAR 2 2 2005

Technology Center 2600

This is in response to the appeal brief filed 22 October 2003 and to the Order Returning

Undocketed Appeal to Examiner dated 1 February 2005.

(1)   Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2)   Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or

be directly affected by or have a bearing on the decision in the pending appeal is contained in the

brief.

(3)   Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4)   Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in

the brief is correct.

No amendment after final has been filed.

(5)   Summary of Invention

The summary of invention contained in the brief is deficient. On page 2 of the Appeal

Brief, reference is made to canceled claim 1. It appears as though claim 15 should have been

referenced.

(6)   Issues

The appellant's statement of the issues in the brief is correct.

(7)   Grouping of Claims

Appellant's brief includes a statement that claims 15-28 do not stand or fall together but

does not provide reasons for the groupings as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8)   Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9)   Prior Art of Record

5,828,773	SETLAK et al.	10-1998
6,289,114	MAINGUET	9-2001

(10)   Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2.   Claims 15-17 and 20-28 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 15, Applicant cites page 5, lines 25-35 of the Specification as support for this claim. However, in the cited paragraph, there is no disclosure or suggestion for

"disregarding those images which overlap or partially overlap," and

"constructing a two-dimensional image... from only non-overlapping images."

Clarification as to where support for these features in the original disclosure is requested.

Regarding claims 20 and 21, Applicant cites page 4, lines 7+ of the Specification as

support for this claim. However, in the cited paragraph, there is no disclosure or suggestion for

"using the ascertained speed to determine the required relative positioning of at least a portion of

the plurality of images." Clarification as to where support for this feature in the original

disclosure is requested.

Regarding claim 24, applicant is requested to show support for

"using the ascertained speed to determine which of the plurality of images overlap or

partially overlap,"

"disregarding those images which overlap or partially overlap," and

"constructing a two-dimensional image… from only non-overlapping images."

For claim 25, Applicant is requested to show support for

"means for determining which of the plurality of images overlap or partially overlap…

from the speed… and to disregard those images which overlap or partially overlap," and

"means for constructing a two-dimensional image… from only non-overlapping images."

Claims 16, 17, 22, 23 and 26-28 are rejected for dependence on rejected base claims.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999

(AIPA) do not apply to the examination of this application as the application being examined

was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C.

122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment

by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4.   Claims 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Mainguet.

        Regarding claim 15, Mainguet discloses a method for sensing a fingerprint comprising:

        generating a plurality of images (figure 5) of different portions of a fingerprint surface by

measuring structural features of the fingerprint surface at given intervals of time with an

essentially one-dimensional sensor array (10, figure 2) as the fingerprint surface is moved

relative to the sensor array in a direction that is generally perpendicular to the sensor array (this

is illustrated in figure 2);

        Mainguet implicitly discloses, "determining which of the plurality of images overlap." As

pointed out by the Appellant on page 17 of the Appeal Brief, Mainguet recommends that all of

the images overlap (column 5, lines 33-42). Therefore, it is predetermined knowledge that all of

the images are overlapping, and the step of determining which images overlap is obviated.

        Mainguet then constructs the final 2-D image of the fingerprint by correlating the

overlapping images and "stitching" them together, resulting in a final image whereby the

partially overlapping images have been disregarded. As can be seen in figure 12, the final image

consists of only non-overlapping image features, and the overlap between successive images is

essentially disregarded, or canceled out.

Regarding claim 16, Mainguet discloses the measuring is performed at each of a plurality

of equally spaced measuring points arranged in at least one line corresponding to the essentially

one-dimensional sensor array (figure 3).

5.   Claims 18 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent

5,828,773 by Setlak et al. ("Setlak").

Regarding claim 18, Setlak discloses applying a varying voltage to a finger positioned

over an electrode (figure 7: a varying voltage 74 is applied to finger through the conducting

electrode layer 71); and

measuring the capacitance or impedance between the electrode and a capacitive sensor

array through a fingerprint surface positioned over both the electrode and the capacitive sensor

array (figures 8 and 10: capacitance between electrode 71 and sensor array elements 78 through

finger surface 79 is measured by the sensor elements),

wherein the sensor array is separately disposed from the electrode (figure 6 shows sensor

array 78 and electrode 71 are disposed in separate layers) and the capacitive sensor array is

adapted to detect variations in capacitance or impedance across the array caused by structural

features of a portion of the fingerprint surface positioned over the array (e.g. see figure 10).

Regarding claim 19, Setlak discloses forming a two-dimensional image representative of

the structural features of at least a portion of the fingerprint surface using the variations in

capacitance or impedance detected in said measuring step (figure 25, image 206).

(11)   Response to Argument

There appears to be a misunderstanding of the claim language as it currently stands.

Claims 15, 24, and 25 include, *inter alia*, the features of:

- determining which images partially overlap or partially overlap,

- disregarding those images that overlap or partially overlap, and

- constructing a two-dimensional image from <u>only</u> the non-overlapping images
  (<u>emphasis added</u>).

Each "image" is acquired at a different sampling instance when a finger is swept over an

essentially one-dimensional sensor. The "essentially one-dimensional sensor" produces distinct

images that are much wider than tall (e.g. 80x1 pixels, 70x2 pixels, 120x3 pixels, etc.).

The limitation, "disregarding those images that overlap or partially overlap," is

interpreted to mean that the *entirety* of a given image is disregarded if *any portion* of the image

overlaps any portion of any other image.

The limitation, "constructing a two-dimensional image from <u>only</u> the non-overlapping

images," (<u>emphasis added</u>) is interpreted to mean that the final 2-D image is constructed *only*

from those images that do not overlap, and hence are not overlapped by, other images.

The Specification does not mention "overlapping images" or "partially overlapping

images." Rather it discloses, "redundant data," which is not equivalent to "overlapping or

partially overlapping images."

"Redundant data" denotes images or portions of images of a fingerprint that have already been acquired. For example, if a certain area of a fingerprint is present in a first image, and then a successively acquired image is *exactly* the same as the first image, then the entire second is redundant. Similarly, if only a portion of the second image *exactly* corresponds to the first image, then that portion of the second image is considered to be redundant. The first image is not redundant since it contains the original and unique image data.

"Overlapping images" or "partially overlapping images" refers to two different images that are either wholly or partially identical, respectively. *Both* images are considered to overlap or partially overlap each other. Thus, when the claim calls for, "disregarding those images that overlap or partially overlap," then it essentially calls for all images that are at least partially identical to another image to be disregarded.

It is not clear whether Appellant is aware of this distinction.

REJECTIONS UNDER 35 USC 112 1ST Paragraph

Regarding claim 15, Appellant has referred to page 5, lines 4-7, 19-23, and 25-35, and portions of original claims 1 and 5 (now canceled) to demonstrate support for the following features:

"determining which of the plurality of images overlap or partially overlap other of the plurality of images,"

"disregarding those images which overlap or partially overlap," and

"constructing a two-dimensional image of the fingerprint surface from only non-overlapping images obtained from the generating step."

Page 5, lines 25-35 of the Specification discloses: "obtain[ing] at least one measurement of each portion of the surface", and then, in the case where the sampling frequency is high, and the finger is moved slowly, "the redundant data may simply be neglected and the image of the fingerprint is comprised by each second or third set of data."

Original claim 1 discloses: "the measurements [of the finger's surface] are performed at different, or partially overlapping, portions of the surface," which is followed by "combining the measurements of the measured portions of the surface to provide a segmented, two-dimensional representation of said characteristics of the surface."

The above passages cited by the Appellant do not explicitly disclose, "determining which of the plurality of images overlap or partially overlap other of the plurality of images." According to claim 1, the surface of the finger is scanned such that partially overlapping images are obtained, and then the images are combined into one large image. However, it is unclear whether *determining which images overlap* is necessary to combine the images.

The passage on page 5 of the Specification calls for the "redundant data" to be "neglected." Implicit in the process of "neglecting the redundant data" is the fact that the redundant data must be ascertained or identified in some manner before it can be "neglected." Therefore, the Specification does show support for determining which data is redundant, which is equivalent to determining which data (i.e. image portions) overlaps other data.   Thus the

claimed step of "determining which of the plurality of images overlap or partially overlap other

of the plurality of images" is thought to be implicitly disclosed by the "neglecting of redundant

data."

In this context, it is understood by the Examiner that the "redundant data" essentially

refers to the portions of the scanned images that contain superfluous, or overlapping, data.

Appellant essentially equates "redundant data" with "overlapping images" (see page 12 of

Appeal Brief). However, as explained above, the two are not considered equivalent.

The limitation, "disregarding those images which overlap or partially overlap," is not

expressly disclosed by the Specification, which merely calls for "neglecting redundant data" in

situations where redundant data is collected. This limitation, taken at face value, is not disclosed

by the Specification and would render the claimed invention inoperable.

According to this limitation, if a finger is scanned such that all of the images overlap or

partially overlap (e.g. as illustrated in figure 12 of Mainguet), then *all* of the images will be

discarded, resulting in no data whatsoever. The Specification does not suggest, "disregarding

those images which overlap or partially overlap." Rather, it discloses, "neglecting redundant

data." Thus, the Specification suggests that, for a first image containing a first portion of the

fingerprint, each successive image containing said first portion is partially neglected. For

example, if there is a 20% overlap between the first scanned image and the second scanned

image, then the potion of the second image that overlaps the first image (i.e. the 20%) is

neglected (discarded). Thereafter, only 80% of the second image will be retained. The

overlapping 20% of the second image is discarded since it is redundant (i.e. it is already present

in the first image). This appears to be the operation of the invention as disclosed in the cited

passages of the Specification.

However, according to the <u>claimed</u> invention, for the above situation, both the first and

second images would be disregarded *in their entirety*, since they are both "partially overlapping"

images. This would essentially eliminate the entire image of the fingerprint and would clearly

produce unusable and ineffective results.

In light of the above assertion, the limitation of "constructing a two-dimensional image of

the fingerprint surface from <u>only</u> non-overlapping images obtained from said generating step"

(<u>emphasis added</u>) is not disclosed by the Specification and would lead to erroneous results. In the

situation where *all* of the images are overlapping or partially overlapping, *all* of the images will

have been disregarded via the previous limitation, and therefore, the final 2-D image is unable to

be constructed. Furthermore, this limitation produces the final 2-D image from *only* non-

overlapping images. Therefore, if *any* portion of a given image overlaps or partially overlaps any

other image, then the given image, *in its entirety,* is excluded from the final 2-D image.

Claims 24 and 25 recite similar limitations regarding the determination of overlapping

images, disregarding overlapping images, and constructing a 2-D image from only non-

overlapping image. Therefore, the above remarks for claim 15 also apply to the corresponding

limitations of claims 24 and 25.

Claims 24 and 25 additionally recite the limitation of utilizing the "speed of movement of

the finger" to determine which of the images overlap or partially overlap. Examiner agrees that

the term "speed," as cited in the claims, essentially corresponds to the term "movement", as cited

in the Specification. Appellant has referred to page 5, lines 4-7, 19-23, and 25-35, and portions

of original claims 1 and 5 (now canceled) to demonstrate support for this feature.

Page 5, lines 4-7 of the Specification discloses, "thus the movement of the finger in

relation to the sensor array must be known" (in order to combine the measurements from

different scanning lines to produce a single line of measurements). Original claim 1 calls for

"calculating [the] movement of the finger" based on the measurements, and then "combining the

measurements of the measured portions of the surface to provide a segmented, two-dimensional

representation of said characteristics of the surface." Original claim 5 and page 5, lines 19-23 of

the Specification disclose how to measure the movement: "by correlating the measurements from

different measuring lines..."

Thus, the Specification and the originally filed claims disclose calculating the movement

(i.e. speed) of the finger and utilizing it for the purposes of combining measurements from

different scanning lines to provide a signal corresponding to one single line of sensors (see page

4, line 38 through page 5, line 7 of the Specification). However, the Specification and the

original claims do not expressly disclose "using the ascertained speed to determine which of the

plurality of images overlap or partially overlap." As stated above, in order to disregard

overlapping images, it is necessary to determine which images overlap; but it is unclear whether

determining which images overlap necessitates utilizing the speed of the finger, or that the

process of determining which images overlap inherently involves utilizing the speed to make the

determination. Since Applicant has not disclosed that knowledge of the speed of the finger is

required to determine which images overlap, it is assumed that the overlapping images can be

ascertained without such knowledge. Consequently, this limitation is deemed to not be disclosed

either implicitly or explicitly by the originally filed Specification.

It is true that, for a sensor containing more than one line of sensors, the speed of the

finger is used for constructing each of the single-line images (see page 4, line 38 through page 5,

line 7 of the Specification). So one could argue that since the images are created based on the

speed of the finger, determining which of the images overlap is also indirectly based on the

speed of the finger. However, the claims are interpreted to denote that the speed is used to

ascertain which images overlap *after* the speed has already been utilized in initially forming the

images (e.g. per the "generating step"). As maintained above, this feature is unsupported.

Claims 20 and 21 call for "using the ascertained speed to determine the required relative

positioning of at least a portion of the plurality of images to form a two dimensional image of the

fingerprint surface larger than any of the plurality of images."

The Specification discloses calculating the movement (i.e. speed) of the finger and

utilizing it for the purposes of combining measurements from different scanning lines to provide

a signal corresponding to one single line of sensors (see page 4, line 38 through page 5, line 7 of

the Specification). However, the limitation in question calls for utilizing the speed to determine

the positioning of the plurality of images. As stated above, the Specification discloses using the

speed to determine the positioning of the scanning lines to form one-line images but does not

disclose subsequently using the speed again either for determining which images overlap or for

combining the one-line images formed based on the speed in order to form the final 2-D image

of the fingerprint.

SUMMARY OF REJECTIONS UNDER 35 USC 112 1st PARAGRPAH:

The following limitation, while previously rejected as unsupported, is now deemed to be implicitly disclosed by the originally filed Specification:

In claim 15: "determining which of the plurality of images overlap or partially overlap other of the plurality of images;"

All other limitations cited in the Final Rejection as being unsupported are still considered to be unsupported. Therefore, the rejections under 35 USC 112 1st Paragraph of all claims containing such limitations are maintained.

PRIOR ART REJECTIONS UNDER 35 USC 102 & 103

The rejections of claims 20-28 have been withdrawn for the reasons cited below.

The rejections for claims 15, 16, 18, and 19 are maintained.

In rejecting claim 15, the Examiner considered only the supported features, and the claim was rejected as best understood in view of the Specification and the rejection under 35 USC 112, 1st Paragraph. However, Mainguet is found to disclose all of the features of the claim, including the determining, disregarding, and constructing steps as cited below.

Regarding claim 15, Mainguet implicitly discloses, "determining which of the plurality of images overlap." As pointed out by the Appellant on page 17 of the Appeal Brief, Mainguet recommends that all of the images overlap (column 5, lines 33-42). Therefore, it is

predetermined knowledge that all of the images are partially overlapping, and the step of

determining which images overlap is obviated.

Mainguet then constructs the final 2-D image of the fingerprint by correlating the

overlapping images and "stitching" them together, resulting in a final image whereby the

partially overlapping images have been disregarded. As can be seen in figure 12, the final image

consists of only non-overlapping image features, and the overlap between successive images is

essentially disregarded, or canceled out. Thus, Mainguet produces a 2-D image of a fingerprint

by collecting images of different portions of the finger at different sampling instances, such that

the images partially overlap; then, Mainguet pieces the images together so that the overlap

between images is disregarded, resulting in a final 2-D image that consists of only the non-

overlapping portions of the images.

Claim 18 is considered to be anticipated by figures 7-10 of Setlak, as further explained in

the Advisory Action (paper 16):

"Referring to figure 9, which further explains the operation of the sensor, capacitor 85 is

an open circuit until the finger is placed in near contact with the ground electrode 54 and sensing

electrode 78. Thus, the varying voltage is present at the node between caps 83 and 85 before the

circuit is completed by the finger. Applying the finger to both ground 54 and the AC voltage at

the node (i.e. at electrode 78) produces a capacitive effect, allowing the AC current to flow

through the finger to ground. Then the capacticane through the finger, which models the ridges

and valleys of the fingerprint, is sensed and output for processing, as shown in figure 9."

Thus, Setlak discloses:

applying a varying voltage (74) to a finger positioned over an electrode (ground electrode

54) (the voltage is applied via excitation electrode 71 and sensing electrode 78 – that is, the AC

voltage is present at sensing electrodes 78 until the finger completes the circuit and closes the

path for current to flow to ground 54); and

measuring the capacitance (i.e. the e-field at d2 (figure 8), which is modeled as capactitor

85 in figure 9) between the electode (i.e. 54, which is modeled as the ground to one end of cap

85 in figure 9) and a capacitive sensor array (30, comprised of excitation electrode 71 and

sensing electrodes 78) through a fingerprint surface (79) positioned over both the electrode and

the capacitive sensor array (as shown in figures 7 and 8, the finger is positioned over both the

electrode 54 and the sensor 30 and the capacitcance through the finger – that is, the capacitance

between the sensor and ground – is measured by voltage follower 73),

wherein the capactivie sensor array (30) is separately disposed from the electrode (54) (as

shown in figure 7, the two are physically separated) and the capactitive sensor array (30) is

adapted to detect variations in capacitance across the array caused by structural features of a

portion of the fingerprint surface positioned over the array (in figure 9, the varying structures of

the fingerprint produce an e-field that is modeled as a variable capacitor 85, and the sensor 30

uses a voltage follower 73 to measure the varying capacitance produced by the fingerprint

positioned over the ground electrode 54 and the sensor 30).

Figure 10 further illustrates how data on the figure's surface is collected by measuring the

capacitance produced by the finger at the sensing electrodes 78 when the finger is placed

between ground and the excitation electrode 71.

Thus, contrary to Appellant's assertions, Setlak does disclose all the features of claim 18,

including "applying a varying voltage to a finger" and "measuring the capacitance between the

electrode and a capactive sensor array through a fingerprint surface"

Regarding claims 20 and 21, the combination of Mainguet and Upton does not teach

"using the ascertained speed to determine the required relative positioning ... to form a two-

dimensional image of the fingerprint surface." However, as explained above, there is not

sufficient support in the original disclosure for this feature.

Regarding claims 24 and 25, Mainguet and Upton, in combination, teach all of the

claimed features except "disregarding which of the plurality of images overlap ... from the speed

determined by said two sensing elements and to disregard those images which overlap or

partially overlap," and "constructing a two-dimensional image of the fingerprint surface from

only non-overlapping images." However, as explained above, there is not sufficient support in

the original disclosure for these features.

Further regarding claims 20, 21, 24, and 25, Appellant asserts that Upton "does not

describe ... determining the speed of the finger movement based on the distance between spaced-

apart sensors and the time lapse between passage of identical features over the sensors" (page 25

of Appeal Brief). However, Upton is thought to disclose this feature. Figure 12 illustrates the

calculation of the finger velocity. The amount of delay 86 between identical features is

calculated. This delay corresponds to the claimed "time lapse of identical structural features."

Then, using this delay time and the known distance between the velocity-sensing elements 76

and 78 (figure 9), the velocity of the finger is easily calculated. See column 10, lines 26-56 and

column 9, lines 41-48.

SUMMARY OF REJECTIONS UNDER 35 USC 102 AND 35 USC 103:

Claims 15 and 16 are anticipated by Mainguet under 35 USC 102(e).

Claim 17 will be allowable if rewritten in independent form and if the rejection under 35 USC 112 1st Paragraph for claim 15 can be overcome.

Claims 18 and 19 are anticipated by Setlak under 35 USC 102(e).

Claim 20 will be allowable if rewritten in independent form and if the rejection under 35 USC 112 1st Paragraph can be overcome.

Claims 21-28 will be allowable if the rejections under 35 USC 112 1st Paragraph for claims 21, 24, and 25 can be overcome.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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